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TRANSLATIONS ON ENVIRONMENTAL QUALITY

No. 127

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HUNGARY

**SMOKE, POLLUTION-FREE FURNACE DEVELOPED**

Budapest HAZAI TUDOSITASOK in Hungarian 15 Nov 76 p 13

[Excerpts] Dr Karoly Peredi, Kossuth Prize-winning engineer, and his team have designed an industrial furnace which is 35-50 percent more efficient and from which emission of smoke and other air pollutants is reduced to a minimum. The furnace has been operating at the Duna Chocolate Factory, and the design principles used have been applied at 110 other industrial furnaces. The process involves breaking down combustion into several phases and prolonging it. A chamber attached to the side of the furnace completely burns the soot which is produced in the course of burning. At the same time, other harmful products of combustion are drastically reduced. Because of the advantages of the patented system, newly built furnaces require 35-50 percent less steel in their construction and have a longer life span. Furnaces smaller than customary can be put up and operated out of doors. New furnaces built according to Peredi's design emit no substances harmful to the environment, and this includes the generation of nitrogen oxides. Extraction of sulfur derivatives is also possible.

CSO: 5000

HUNGARY

BRIEFS

POLLUTION OF DANUBE--The water restriction in the city of Pecs which was reported yesterday is expected to come to an end this evening. It was caused by ammonia pollution in the lower reaches of the Danube which, in turn, originated from the 300,000 cubic meter industrial sewage reservoir of the Pet Nitrogen Works. Ultimately the ammonia-bearing industrial sewage is to be siphoned from the reservoir for the purpose of agricultural irrigation. However, until the irrigation network is completed, it is necessary to empty the reservoir twice a year. This was done between 2 and 5 November. Due to low water levels in the Danube and a reduction in the rate of flow, however, the concentration of pollutants in the water in the Baja and Mohacs area became considerably higher than usual. Because of this it became necessary to shut down numerous water-extracting facilities. In addition to ordering a 20-25 percent restriction on industrial water usage, the authorities called for the discontinuation of piped water service so there would be sufficient water for hospitals, bakeries, dairies and slaughterhouses. A detailed investigation of the causes of the pollution is continuing. [Budapest MAGYAR HIRLAP in Hungarian 12 Nov 76 p 6]

CSO: 5000

YUGOSLAVIA

SERBIAN LAW ON AIR POLLUTION NOT SUFFICIENTLY IMPLEMENTED

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 17 Nov 76 p 11

[Text] Serbia was the first republic to issue a Law on Protection From Air Pollution (in 1973) which prescribes the maximum permissible concentration for 12 harmful substances which appear most often in the air of populated areas, as well as the kinds and amounts of harmful matter which can be emitted into the air from certain pollution sources.

Protection from air pollution is being organized and carried out in opstinas. Opstina assemblies are prescribing measures for preventing pollution in their territory, are providing for clean air control, and supervising implementation of the prescriptions of this law by OURs (organizations of associated labor), other organizations, and citizens, whose facilities are polluting the air.

At a meeting organized by the Society for Clean Air of Serbia, Dr Vera Sreckovic, republic sanitary inspector, said that application and implementation of the legal regulations in this area are not satisfactory, although the legislative and standard organization of this matter offers a solid basis for achieving the constitutional right of people to a healthy environment.

In most of the cities of Serbia measurements have been made of the air pollution level. But regular systematic measurements are made only in some cities. There are numerous urban areas for which there are no statistics on the pollution level. Financing of air pollution control has not been resolved and measurements have largely been made at the expense of work organizations. In regard to measurements of the pollution sources, these are made sporadically at the request of administrative organs responsible for such supervision.

The implementation of checks on emission of harmful matter from internal combustion engines has been delayed because the equipment, personnel, and accompanying regulations are lacking.

Only modest results have been achieved in regard to putting the prescriptions of this law into practice. The question of protecting the environment has not been given sufficient attention in OURs and this question is considered separately from the planned general development and carried out as an incidental activity. The plans of sociopolitical communities [republics, provinces, opstinas] contain largely views of principle. Programs involving concrete actions and measures are lacking, stages for achieving goals are not specified, and the financing structure is not considered--all of which are essential conditions for implementing the law.

It is expected that self-management interest communities will specify the concrete goals and tasks in this area; but these agreements have not yet been made, on the whole.

Finally, Dr Sreckovic said, the prescriptions of the law have not been consistently implemented, and the establishment of rules of conduct for those who are responsible for the sources of pollution has not been adequately insisted upon.

CSO: 2800

MAURITIUS

POLLUTION OF RIVERS REPORTED

Accidental Pollution in South

Port Louis LE MILITANT in French 27 Oct 76 p 1

[Text] Since last week, the inhabitants of certain southern villages, namely, Chamouny, Chemin Grenier, Surinam, Bel Ombre, St Martin and Baie du Cap have been penalized because of an accident which polluted the Mont Blanc River. Indeed, about 300 gallons of fuel oil were accidentally dumped into this waterway.

Since then, the inhabitants of these villages have had great difficulties, and the authorities were very slow in arranging for water from Bel Ombre to be distributed. Some inhabitants had to go to Baie du Cap to get water.

Guimbeau's River Poisoned

Port Louis LE MILITANT in French 26 Oct 76 p 4

[Text] Cyril Guimbeau, big landowner and one of the PMSD [Mauritian Social Democratic Party] candidates, held a press conference in Rodrigues yesterday afternoon, during which he alleged that poison was detected in the waters of a river which flows on one of his pieces of property located in St Aubin.

According to Guimbeau, a "youth commando" not realizing the consequences of such an act, probably put some poison in this river. "The tragedy," he added, "is that the river has been completely polluted and the animal life seriously affected by the large amount of poison."

According to him, those involved are young people who were probably provoked by the recent statement of politicians in Curepipe and elsewhere in which his "family was also criticized." These politicians reportedly said: "Guimbeau eats St Aubin shrimp, Guimbeau eats Riche-en-eau shrimp."

Those having jurisdiction over the St Aubin property will ask the police to begin an investigation into this affair to determine who is responsible.

USSR

MINISTRY OFFICIAL STRESSES IMPORTANCE OF EFFICIENT USE OF WATER RESOURCES

Moscow EKONOMICHESKAYA GAZETA in Russian No 43, Oct 76 p 10

[Article by Yu. Belichenko, chief of the State Inspectorate for Protection of Water Resources of the USSR Ministry of Land Reclamation and Water Management: "On the Complex Approach to Water Resources Utilization--Where To Direct Our Efforts"]

[Text] The rapid development of the country's productive forces is requiring even greater involvement of water in the economic turnover. Therefore, right now the quantitative and qualitative conservation of water resources has become an important economic problem, the resolution of which, to a great degree, depends on the development of the national economy.

In recent years the USSR Supreme Soviet has passed a number of extremely important laws and ukases aimed at protection of the water environment. Of primary importance among them is "The Fundamentals of Water Legislation of the USSR and the Union Republics." Control has been intensified for fulfilling the legislative requirements on protection of water resources and increased responsibility has been established for their observance. The CC CPSU and the USSR Council of Ministers have adopted a number of decrees calling for a complex of measures to protect from contamination the waters of the Caspian, Baltic, Black and Azov seas and the river basins of the Volga, Ural, Tom' and Severnyy Donyets, and to preserve the natural riches in the basins of lakes as Baykal and others.

Much has already been done to preserve and multiply water riches, not only to safeguard them for the present, but also for future generations. In just the last five-year plan about 9,000 major water conservation complexes became operational. Production technology was improved at the industrial enterprises with the aim of decreasing the amount of dumped sewage. Systems for multiple water utilization have been widely adopted. Thanks just to this, the savings in fresh water has reached many billions of cubic meters annually.

The kolkhozes and sovkhozes, the sea and river steamship lines have made their contributions to the overall matter of protecting natural waters.

For example, one can cite the fleets in all major river basins being equipped with devices and systems for collecting polluted water. Collection of petroleum products and other contaminating liquid and solid waste products is being realized. Storage tanks have been built for accepting contaminated water as well as shore stations for their decontamination and use of waste products.

An analysis of the results of the indicated work shows that the sanitary condition changed favorably at the majority of rivers and other bodies of water in the country. There was a distinct improvement in water quality of the Volga, Ural, Dnepr, Desna, Svisloch' and Moskva river basins and many others.

The 25th CPSU Congress foresaw the need to sharply curtail the influence of waste products on the environment, to more actively develop and introduce technological processes to guarantee a decrease in waste products and their maximum use, to adopt closed cycle water systems and to protect the bodies of water from contamination.

#### On Continual Technology

One of the major trends in such work is the introduction of new or improved technological industrial processes allowing for maximally decreasing or completely eliminating the formation of contaminating sewage.

In connection with this, the approval of new criteria to evaluate technological processes is required. Where yesterday's decisions on how progressive something was based solely on technical and economic factors, today a third, no less significant, factor has moved to the forefront--the ecological.

It is quite important that the technological innovators in their activities are governed by essential fundamentals, keeping in mind, first and foremost, that new technology must be continual and use little water. In a number of industrial branches this is already being done and is economical. And so, in the electronics industry waterless technological processes tied to the manufacture and cutting of plates and washing of glass have been created and adopted. This is also the case at facilities for coating components with precious metals and alloys.

However, this is not enough. What is needed is a massive replacement in many branches of the national economy of existing technology with new, closed cycle technology.

It is worth noting that in a number of new, comparatively recent rising industries (for example, the atomic industry) this problem has been resolved in a positive manner because the planning and construction of these projects took into account the implementation of environmental protection measures. Unfortunately, in several long existing industries (the paper and pulp industry), there as yet is no such approach.

Many scientific developments exist to permit a principally new, reliable foundation to solve problems for the protection of water resources from pollution. One of these is based on vacuum plating of rolled iron instead of using galvanic coating. This provides job safety, eliminates dumping of harmful substances into water sources and permits high-quality coating. The water requirements at vacuum plating facilities have been reduced to a minimum.

A number of enterprises have already put such technology to work for them. At the Kursk Storage Battery Plant a device for vacuum application of nickel on steel strips has been operating for several years. In the near future this course will be followed at the non-ferrous metal enterprise. In the development stage are plans calling for several large scale vacuum plating systems for the country's metallurgical plants. However, the nation still has many industries where the application of new technology is possible and necessary.

There is another important trend--the development and wide acceptance of repetitive-circulating water supply systems as well as internal-drainage systems. Even now we see examples where instead of creating local purification schemes utilizing valuable substances and other measures, sewage water is dumped from all industries into one common stream. Purification takes place according to an intricate multistage scheme. And this, as a rule, complicates the creation of closed circulating water schemes. In a number of the branches of industry, schemes have already been developed and realized with local purification that have allowed for a significant decrease in the specific norms for water demand, and in several instances have completely eliminated sewage dumping.

Presently industry needs a lot of water for cooling. Consequently, with the aim of saving the question arises about introducing air cooling where possible and profitable as, for example, in the chemical, petrochemical and petroleum refining branches. Figures indicate that with the adoption of air cooling at a petroleum refinery having a capacity of 12 million tons annually, there would be an 18-20 million ruble decrease in capital investments for the water supply and sewage systems. Operational expenses would decrease and the demand for water would go down approximately 60 percent.

#### Using Advanced Practices

Alongside those already mentioned is the efficient water saving method of evaporation cooling. It is highly recommended for enterprises of the Ministry of Ferrous Metallurgy. At 35 blast and 300 open-hearth furnaces closed cycle water use is being adopted. The steam heat and hot water formed by this method can be successfully used for municipal economic needs. The Nizhnedneprovskiy Turbo-Milling Plant imeni K. Libnecht, based on heat waste products, created a hothouse combine. The cost of raising vegetables has been lowered considerably here.

The treatment and elimination of residue formed while purifying sewage water is a serious problem. In the present five-year plan we must find wide introduction of mechanical dehydration and thermal drying of residue with wide use of them for various purposes: as fertilizer, raw material for building materials and as a source of other valuable substances.

The purification facilities of Orekhovo-Zuyevo with a productive capacity of 100,000 cubic meters daily can serve as an example of the successful adoption of new methods for treating residue. The dried residue is hauled to the fields to be used as fertilizer.

There are many difficult problems in the field of protecting the water environment which require the speediest resolution. Desalinization and dehydration of petroleum during extraction are some of them. They would permit construction of petroleum refineries with circulating and repetitive water supply systems without the dumping of sewage into water resources.

In various instances it is necessary to completely deny sewage dumping into bodies of water. One of the ways to resolve this problem might be the economically advantageous use of specially prepared sewage water on irrigated fields. Such fields exist near Kiev, Volgograd, Astrakhan' and in a number of other regions of the country. However, their area (about 100,000 hectares) cannot be termed large. According to specialists' calculations, effective use of dehydrated sewage water can be done on an area exceeding two million hectares.

Major significance in the matter of water environmental protection from contamination is to be found in the control over the qualitative make-up of both sewage and natural waters. The first scheduled automated control and operation system has already been established on the Moskva River. One is being readied on the Severskiy Donyets.

To resolve the problems of water environmental protection complex measures need to be carried out. However, they cannot simply be a summation of some measures but must be economically substantiated and incorporate overall aims and problems.

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USSR

## PROBLEM OF POLLUTION OF ESTONIA'S WATER RESOURCES STUDIED

Tallin SOVETSKAYA ESTONIYA in Russian 16 Oct 76 p 2

[Article by A. Miydel', scientific secretary of the Institute of Geology of the Estonian SSR Academy of Sciences: "Geology and Environmental Protection"; passages enclosed in slantlines printed in boldface]

[Text] / Among the tasks established by the 25th CPSU Congress, scientists have been particularly charged with problems linked to environmental protection. It is necessary to deepen and expand research, the aim of which is to predict the harmful impact of substances that pollute the environment. Such work will permit future planning of industrial and agricultural enterprises so that their contaminating influence on the environment can be completely eliminated or held to a minimum./

In recent years the Estonian SSR Institute of Geology has been devoting much attention to the problems associated with the contamination of underground water and to their scientific resolution. Presently under study and the subject of future study is contamination of underground water and the capability of self-purification. In the beginning, this work was carried out in northern Estonia where the danger of water contamination is especially great due to the thinness of the protective soil layer. Besides, the penetrability of polluting substances to the depths is aided here by the fragmentation of dolomite, limestone and, in connection with this, sinkhole formations.

Research has shown that earlier applied chloroorganic pesticides (DDT and others) are observed almost everywhere in underground waters but within permissible sanitary and technical standard limits. Their presence in ground water many years after the end of their use eloquently speaks of how great the persistence of these poisonous chemicals is under natural conditions. It is very important that the researchers explain the behavior of different contaminants in various geological deposits: how deep and how fast they seep and how and to what degree the chemical makeup of underground water is changed in the long run. Here is where the work was concentrated. Similar research was expanded to southern Estonia. Here it was necessary to study the various granulated and loose deposits (sand, gravel, etc.), and especially moraines,

capable of protecting underground water from seeping contaminants. The research conducted has shown that the filtration properties of moraines, however, are quite irregular and this means that the fact that their protective capability might be extremely varied is something that must be considered.

For a number of years the institute has been studying the springs of northern Estonia. As is generally known, owing to the geological karst on the heights of the Pandivere, precipitation and ground water absorption takes place through fissures. A large portion of the absorbed water escapes in the form of springs along the slopes of the Pandivere heights from where many rivers originate. Without lengthy explanations, it is clear that the purity of these springs and rivers depends on to what degree we will be capable of preventing water pollution on the summits and how much we will know about the principles of distribution of the local karsts.

Land reclamation and hydrological research has been developing at the institute in recent years directed at preventing harmful reactions from land reclamation. The aim also is to conserve supplies of underground water and maintain their purity. This is especially important because the republic's five-year plan calls for land reclamation to be conducted on 160,000 hectares of land. It is clear that to do this it is necessary to possess good knowledge of the geological and hydrological peculiarities of the corresponding regions. The research being conducted by the institute must provide the answers to many important questions--how great is the influence of land reclamation on the water systems of neighboring regions having thin layers of soil cover, on the behavior of springs and wells, what are the possibilities of using karst configurations as collectors of drainage water, etc.? This work is being done in close cooperation with the institutions of the Estonian SSR Council of Ministers State Committee on Land Reclamation and Water Management. The methods developed at our institute on land reclamation analysis and hydrogeological evaluation of sources are beginning to be adopted.

In this connection then there is the significant expansion in the production of phosphorites based on the deposits at Toolseye. The prognosis of how this upcoming production influences the environment is becoming urgent. It is necessary to prevent possible contamination of the environment by industrial waste products. Keeping this in mind, the institute planned additional studies. With the help of a great number of research methods, the scientists explain the mechanism of contamination processes and predict the impact of such production on the environment. The aim of all this is to work up, based on derived results, a complex of geochemical methods to determine contamination of ground and underground water and to develop measures to prevent contamination (especially of underground water).

/ This additional research incorporated into the institute's working plan is our response to the recently published appeal from three scientific collectives of the Estonian SSR Academy of Sciences to all of the republic's scientific institutions. This call to deepen ties with practice was approved at an open party meeting of our institute./

The aspects of environmental protection are even considered while carrying out much other work. Here we are speaking about the marine geologists studying the bottom deposits of Vyaynamerye. Their work is part of the research program of the Baltic Sea which is being conducted jointly by the academies of sciences of the Baltic republics. The program's aim is to predict changes occurring in the Baltic Sea.

As it must appear from this short sketch, the Institute of Geology has planned a good deal of work with the intention of preserving for future generations the environment and nature, at least to the degree that they are in today. One can feel assured that the collective will do everything to see that the plans do not remain simply on paper but will be successfully put into practice.

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USSR

#### INSTITUTE RECTOR CALLS FOR COMPULSORY ECOLOGICAL TRAINING

Moscow PRAVDA in Russian 11 Sep 76 p 3

[Article by V. Proskuryakov, corresponding member of the USSR Academy of Pedagogical Sciences, doctor of technical sciences, rector of the Leningrad Technological Institute imeni Lensoviet (Leningrad): "Waste -- An Outdated Concept"]

[Text] The protection of nature has been raised to the rank of state policy in the Soviet Union. In 1972 the CPSU Central Committee and the USSR Council of Ministers adopted the decree "On Stepping Up the Protection of Nature and Improving the Utilization of Natural Resources." The Main Directions for the Development of the USSR National Economy in 1976-1980 that were adopted by the 25th party congress also devote a great deal of attention to this problem.

Today many enterprises, before discharging industrial wastes and gases, put them through powerful sedimentation tanks, aerators, filters, cyclone separators and a multitude of other devices. The Soviet State allots a considerable amount of money for the construction of purification installations. Moreover, according to existing legislation, not a single enterprise can be put into operation without them.

More and more scientists and scientific collectives are engaged in the development of methods for removing harmful substances from industrial wastes. The higher school is already graduating specialists who can deal fairly well with problems of decontaminating waste waters, engineers for industrial ventilation and purification of gas discharges into the atmosphere and specialists in water supply. Training has been started -- although still on a small scale -- for engineers in the area of utilizing wastes from the pulp and paper industry. There is no doubt that in the near future other branches of industry will also begin to receive young specialists who will be able to skillfully deal with the purification of waste waters and gases that are discharged into the atmosphere.

But the problem still remains a problem. In the first place, for many decades and even centuries, industrial workers have been interested only in the final product, economic indicators and working conditions. What takes place beyond the walls of the plant -- in the river, in the atmosphere -- has little to do with them. Incidentally, about 20 or 30 years ago there was still somewhere to pour wastes and it seemed that the air basin would disperse any gas discharges. Millions of industrial workers like, incidentally, tens of thousands of planners and designers of machines and researcher-technologists, were educated to think that things would be this way in the future as well. Sometimes this is reflected in the approach to designing purification installations and operating them. In the second place, the best purification devices with the most correct utilization of them are far from always capable of removing all harmful substances.

Eminent scientists think that the most effective way of solving the problem is to change over to principally new production technology that is intended for comprehensive processing of raw materials. Even D. I. Mendeleyev pointed out that the main goal of advanced technology is to find ways of producing something useful from that which has been discarded and is useless.

Production processes that envision comprehensive utilization of the initial raw material are already being used in practice -- for example, at the Slantsy Combine, the Lisichansk Soda Plant imeni Lenin, and the Nevinnomysk Chemical Combine. The Achinsk petroleum processing combine is intended for closed water circulation, that is, it does not have waste waters. We have accumulated experience in utilizing in hothouses carbon dioxide which is usually discharged into smoke pipes. The inorganic compounds of nitrogen and phosphorus which are contained in industrial waste waters are an excellent substratum for raising unicellular algae. Phenol wastes from the majority of petrochemical industries are a nutritional medium for nutritive yeasts. Secondary sludge from processes of biological purification of waste water that are separated out and condensed by mechanical methods (they were developed at our institute) can be utilized for fertilizers or for live-stock feed.

It would be easy to give dozens of examples that convincingly show that with the modern scientific and industrial might, the very concept of "wastes" is beginning to be outdated: Everything that is delivered to the enterprise can be utilized.

But planners and designers still sometimes remain captives of old ideas. Reducing ecologically harmful production wastes requires, first of all, a psychological adjustment. It is quite necessary to instill in planners, technologists and engineers of enterprises a kind of "ecological conscience." But, of course, knowledge is also needed. Today's engineer is obliged to have a clear idea of how his plant influences the environment. He must be familiar with the fundamentals of ecology, with the technical, economic and social problems of polluting the biosphere, with general measures for protecting the environment and with Soviet legislation regarding this problem. It is the duty of the higher school to educate such specialists.

Three years ago a department of ecological technology and labor protection was created at the Leningrad Technological Institute imeni Lensoveta. Its workers give students of all specialties a course in "Protection of Nature" which arms young specialists with knowledge of the theoretical fundamentals of ecological technology, the fundamentals of general ecology and the principles of creating and operating waste-free industries. The students study methods of controlling wastes and gas discharges, systems for purifying them and methods of utilizing and eliminating wastes. They must then make this knowledge deeper and more detailed with respect to their corresponding particular technologies and processes.

For example, in the department of technology of the petrochemical and carbon chemical industries, they consider problems of utilizing hydrogen sulfide that is formed during the process of purifying natural gases and gases from pyrolysis and the manufacture of coke, in the process of neutralization of water with alkaline purification of petroleum products and the extraction of phenols from waste waters from shale processing. One of our mandatory requirements is that each thesis for each course must include a section entitled "Protection of Labor and the Environment."

A general course on protection of nature is also given in the department for improving the qualifications of engineering and technical personnel in the chemical industry. This is extremely important since many specialists who work in industry have not received ecological training.

Specialists are trained in the area of protection of nature in many of the country's VUZ's. Apparently the volume of content of the course and its place in the training plan can differ for institutes of various profiles. In our opinion, one thing should be compulsory: Education of youth in the spirit of understanding problems that arise when nature and industry meet. Young specialists of all areas of science and technology are obligated to master specific knowledge which will help them in their independent lives to complete each step an "ecological conscience." This education is necessary not only for graduates of universities and institutes, but also for all students in teknikums, industrial technical schools and secondary schools. And this work should be considered one of the most important subjects in each training institution because there is not a single occupation in which one of its representatives could not make a contribution to the overall cause of protection and adornment of his own natural surroundings.

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USSR

## ESTONIAN GOVERNMENT OUTLINES ENVIRONMENTAL PROTECTION PLANS

Tallin SOVETSKAYA ESTONIYA in Russian 26 Oct 76 p 4

[Article: "At the Presidium of the Estonian SSR Council of Ministers"]

[Excerpt] Yesterday, 25 October, the scheduled session of the Estonian SSR Council of Ministers took place. E.G. Tynurist, first deputy chairman of the Estonian SSR Council of Ministers, directed the meeting.

### On Intensification of Environmental Protection

The republic's government planned tasks on intensification of environmental protection in the 10th Five-Year Plan. It was noted that in recent years, thanks to the construction of effective purification and water conservation facilities and the realization of a complex of technological measures, there has been a significant decrease in the amount of dumping of impure sewage water and industrial wastes into the rivers and other bodies of water of the Baltic Sea basin. The air has become cleaner. A definite lag is in the construction of sewage networks and purification facilities in the cities. Several enterprises have not fully implemented the complex of measures for the maximum reduction in the amount of impure sewage water to avert environmental pollution.

The ministries, the city and rayon executive committees and the enterprises under union authority have been entrusted with developing and adopting measures to guarantee the elimination of possible dumping of impure industrial and domestic sewage water into the rivers and other bodies of water of the Baltic Sea basin. A list of cities and towns where corresponding measures must be realized in the 10th Five-Year Plan has been approved.

Tasks have been defined on improved operation of sewage networks and structures, on technical servicing of facilities for purification of agricultural waste water, for the collection of waste water and solid wastes from ships, for the separation of water containing oil, and for the localization and liquidation of accidental oil spills.

With the purpose of intensified natural protection, the ministries must designate those responsible for plan realization and control over fulfillment of natural conservation measures. The tasks have been established for the planning of purification facilities and for distribution of capital investment under a system of proportionate participation.

The job before the Estonian SSR Academy of Sciences is to expand scientific research work in the study of the makeup, the dynamics of change, as well as forecasting the vital activity of the marine environment of the Baltic Sea. The academy is further tasked to draw up recommendations for more effective safeguarding of the Baltic.

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USSR

## ENVIRONMENTAL PROTECTION MEASURES IN LATVIA DISCUSSED

Moscow IZVESTIYA in Russian 5 Oct 76 p 2

[Article by P. Strautmanis, chairman of Presidium of Latvian SSR Supreme Soviet: "Our Friend Nature"]

[Text] In the initial phase of Soviet power, Vladimir Il'ich Lenin said that natural riches must be utilized wisely and carefully and with a view to scientific theses. This wise Leninist requirement, which became one of the basic principles determining party policies regarding the protection and multiplication of natural riches, has now taken on special significance. The scientific-technical revolution has resulted in a great leap for the development of production forces. This in turn required a more extensive utilization of natural resources and strengthened and activated the effect that man has on his environment.

In building cities, in developing industry and in extensively utilizing chemicals in agriculture, man, whether willingly or unwillingly, is destroying the balance of nature and is polluting reservoirs, the air and the soil with dangerous industrial and municipal wastes. "Nature can be utilized in different ways," said the General Secretary of the CC CPSU, L. I. Brezhnev, in his report to the 25th CPSU Congress. "It is possible to leave behind fruitless, lifeless land that is harmful to man, and there are many examples of this in history. But it is also possible, and necessary, comrades, to enoble nature, to help nature to more fully reveal its vital force. There is a very simple, well-known expression, 'flowering region.' This is what lands are called where the knowledge, experience, dedication and love of nature by man has created miracles."

How are our republic councils protecting and preserving nature? How are they fighting to ensure that Latvia is called a "Flowering region"?

Let us begin with the land, the most important property of the people. Among all of the natural resources, land occupies a special place as the material basis for life and the well-being of man. In recent years village and settlement soviets, members of the all-union interchange of views with the motto, "Valuing and protecting Land," have looked for opportunities to add

to the productive lands hundreds of hectares that were never used before. Local soviets and their permanent agricultural committees are in charge of controlling the proper and efficient use of lands, the fulfillment of measures dealing with fighting erosion and the quality of reclamation work. All of this has a favorable effect on the growth of the harvest. Special attention is given to protecting soil, particularly from poisonous chemicals harmful to man. The republic's council of ministers several years ago forbid the use of such poisonous chemicals in the fight against pests and issued special scientific recommendations on substitutes for the chemicals. Soviet ispolkoms and deputies are in control of the fulfillment of these resolutions. They are aiming for the correct and skillful use of chemicals in agriculture. The deputies of the Leymanskiy agricultural soviet of Yekabpilsskiy Rayon can be singled out here. They systematically and carefully examine how chemical preparations are used in the fields and achieve good results.

Our republic is rich in forests. They occupy almost 40 percent of its area. A great deal of forest-restoration, breeding and hydromeliorative work is done here. It has allowed us to increase the growth of timber greatly and to significantly improve the marketability of the wood.

However, the forest should not be regarded from the utilitarian point of view alone. Its health and hygienic and aesthetic significance is great. It acts as the natural basis for full-value rest. Trees are, after all, the chemical laboratory that purifies the air and enriches it with oxygen.

Green zones have been created around our cities, where prophylactic cutting only is permitted. About 200 old parks and unique dendrological plants are being included in the list of things to be protected. The republic's council of ministers has assigned the ispolkoms of local soviets the job of taking care of them within their own areas. To the honor of local organs of power, this task is being skillfully dealt with. In the spring and fall thousands of people are recruited for subbotniks [Voluntary unpaid work days] by the Jurmala City Soviet. These workers clear the pine forests above the sea and plant trees and shrubs.

The Gauja National Park is located on the territory that is under the jurisdiction of the Valmiyerskiy, Tsesisskiy and Riga rayon soviets. Its area equals over 40,000 hectares and includes the ancient valleys of the Gauja River that are famed for their beauty. This is a popular area for tourism and relaxation. The park is carefully taken care of.

The republic is rich in water resources. There are over 12,000 rivers and 3,000 lakes. In addition, the shores of Latvia are washed by the Baltic Sea. However, as we know, these riches disappear with use. The rapid growth of water consumption for industrial and municipal needs and the extensive development of land reclamation have lowered the level of ground waters. For this reason, serious measures are being taken to increase and efficiently utilize water resources. In recent years in the republic many reservoirs and ponds have been built and water-preservation measures are being implemented.

In this, a big role is being played by local organs of power. Questions related to protecting nature and reservoirs in particular are discussed at soviet sessions and at meetings of executive committees. A session devoted to this very important problem was held by the Rizhskiy Rayon Soviet. The decisions made by the soviet obliged the directors of farms and enterprises to stop the use of deep artesian water for industrial needs, to prohibit the washing of equipment in areas where the dirty water could pollute reservoirs and underground water, to provide for the construction of cleaning structures that would function properly. The fulfillment of these tasks is under the strict control of ispolkoms. The directors of the Turayda and Adazhi kolkhozes and of the Gauya Animal Sovkhoz were punished for violations in this area.

The protection of the Baltic Sea is also under the unabated control of the soviets. Thus, the Ventspils City Soviet protects it from pollution with oil products. Twice per year on the initiative of deputies, there is training for all port services in order to work out cooperation plans for eliminating the consequences of reservoir pollution. Today special structures in the Ventspils port clean 4 million cubic meters of ballast water annually.

During the past five-year plan the capacity of biological cleaning structures and the number of industrial objects equipped with cleaning systems have increased in Latvia by several times. The amount of sewage that is cleaned has almost doubled. But this is not enough. Here we must mention the position of some ministries and departments. Despite the numerous reminders, they are not rushing with the building and reconstruction of cleaning structures in fish industry enterprises. It is the fault of the Ministry of the Pulp and Paper Industry that cleaning structures are being built slowly and operated badly at the Slokskiy Pulp and Paper Combinat. This enterprise is still polluting the Lielupe River that flows through the resort city of Jurmala with harmful industrial wastes. Departmental barriers should not be used to remove oneself from the protection of reservoirs, and the water code and other nature-preservation acts should not be violated.

Do we have to speak of the importance of clean air for the plant and animal worlds? The residents of Riga remember well the damage caused to the pines of Mezhaparks by gases from the pipes of the superphosphate plant. Many of the trees in this beautiful wooded park would have died if we had not eliminated the dangerous source of air pollution.

In the republic a great deal is being done to make sure that the air above man is clean. There are over 1,000 apparatuses for gas purification operating in industrial enterprises. The largest plants are equipped with electric filters. Those industries that are especially damaging to the air basin are being moved out of the Latvian capital. The introduction of gas and heating systems is proceeding at a rapid rate in industrial and municipal structures. The ispolkom of the Daugavpils city soviet has managed to eliminate 57 departmental and housing furnaces, and to include the structures using them in the heating network. A great deal is being done here to fight industrial and other noise. Attached to the ispolkom is a commission on noise. It was

able, in a short period of time, to ensure night quiet on the streets, to establish order in the operation of refrigeration equipment in trade and foodstuffs enterprises which had been disturbing the peace. The Riga and Yurmala ispolkoms can learn from this! The residents of Riga and Yurmala justifiably complain about the loud music coming from stadium speakers and from transistors that young people carry on the streets and in the parks. There has been little concern shown still for the noise coming from planes and cars.

The problem of the interrelationship between nature and industry is complex. For this reason the approach to it must be complex. Forces must be united and harmful departmentality in the use and protection of natural riches must be eliminated. The republic's Gosplan has passed a resolution concerning the elaboration of a complex program to protect nature and to efficiently use natural resources in 1976-1990. Its successful fulfillment will depend greatly upon local organs of power. We must admit that local soviets do not always make use of their rights in protecting nature. The Riga ispolkom, for example, has poor control over the observance of laws in this area and leaves violators unpunished.

A great deal of construction is going on in Latvia. Construction work has also increased greatly in rural areas. For this reason the planning of landscapes is very important. It would seem that the soviets would oversee the creation of new and preservation of old landscapes that would meet the needs of industry as well as aesthetics. However, not all of them are equal to the task. Sometimes local organs of power permit haste in the selection of sites for the building and planning of settlements.

These shortcomings were discussed at a session of the republic's supreme soviet, which dealt with the problem of protecting the environment. Actively participating in its preparation was the permanent committee on the protection of nature of the republic's supreme soviet. The committee watches carefully over the observance of nature-protection measures and systematically examines the topic during its meetings. At one of them the Ministry of the Meat and Dairy Industry was criticized. The deputies determined that the subdepartmental enterprises annually directed 8 million cubic meters of polluted water into reservoirs. In fulfilling the recommendations of the committee, the ministry corrected a great deal in a short period of time.

The committee depends upon a large aktiv, particularly on the Society for the Protection and Nature and Monuments of the Latvian SSR. This society includes about 60,000 people. It has 3,000 collective members. It is a great force capable of actively helping the soviets. There is no doubt that the local soviets of our republic will continue to improve organizational work to protect nature and to fulfill one of the most important state tasks -- the careful and wise utilization and reproduction of its riches.

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USSR

## WATER PURIFICATION TECHNOLOGY DESCRIBED

Moscow STROITEL'NAYA GAZETA in Russian 10 Nov 76 p 4

[Article by S. Serov: "Pure Water Plant"]

[Text] Now Moscow residents do not have to go to the end of the world with their fishing poles; they can have a good catch within the boundaries of the city. Fish represent the most errorless analysis of water and a real indication of a decrease in poisonous chemicals that came into reservoirs from plants and factories. There was an immediate effect on the life of the rivers around Moscow; they became cleaner. This is the result of extensive work done by Moscow workers to protect their environment.

Many production, scientific and planning organizations were recruited into the fight with water pollution. They included the All-Union Scientific-Research and Design Institute of Chemical Machinery (NIKhimmash). It is working on complex-assembly equipment for the technical and thermal treatment of sewage. Individual points on the assembly line are already operating in purification structures in the capital and in other cities of our country.

Schematically, the complex developed by the institute can be represented thus. Everything that is directed by the city into sewers first passes through grills which catch large objects from the current (metals, plastics, wood, etc.). Then the current is allowed to stand in reservoirs. After decontamination through a system of settling tanks, the current is directed into a river, and the silt that has settled to the bottom is subject to further treatment. This is the most difficult part.

The precipitate contains such small particles that only the finest filters can catch them. But the material that is pulled over the grill drum through which the dirty water is allowed becomes clogged very quickly. Filters must be changed frequently.

Scientists and builders of NIKhimmash have found a solution to the problem. They have developed so-called filters with replaceable webs. The webbing is not tightly placed on the drum, but moves through it and the system of auxiliary rollers, similar to a line conveyor. The drum acts as the driving shaft. It, loaded half-way in the tray with sewage, pulls the "continuous" webbing, repeatedly dipping it into the liquid and then directing it into cleaning apparatuses. Air is pumped from the drum that is

covered with the webbing. Because of this, the water is pulled through the webbing inside the drum and the dirt settles on the surface of the filter.

Further, the webbing belt passes through a system of rollers. On one of them it is turned sharply and the settled substance falls off in balls. The sediment is put on another belt and moved to another apparatus for further treatment. The belt is moved into a bath in which it is washed by streams of water or an acid solution.

Let us emphasize an important detail -- the participation of man here is not necessary because the process can be easily automated. The output of the filter with the removable webbing is double that of apparatuses being used today.

At the same time, centrifuges with conveyors are being worked on by the institute. They are to be used for the same purpose as the filters but for larger volumes of current. The dirty liquid is subjected to centrifugal forces and separates into water and sediment. Through an opening in the centrifuge the water is poured out, and the sediment is removed by means of a conveyor.

The moisture content of the sediment after treatment according to such a method decreases from 95 to 65 percent, which is completely acceptable. The centrifuge is planned for an output of up to 30 cubic meters of current per hour.

The final stage involves the drying of the damp sediment. There is a difficulty in this as well. The aggregates used today do not ensure even drying and the mass that is removed is in large clumps.

The NIIKhimmash has developed new designs for dryers. The clumps of damp silt are directed by the transport conveyor to flares of burning gas. The clods, attracted by the flames, fly with a rapid speed. They collide and break up into small pieces. Naturally, small pieces dry more rapidly. The current of the burning gas directs the clods into a low-pressure area, where the mass is separated according to size. The large pieces are returned to the dryer and the ready product is collected in bunkers.

Externally it resembles large-grain sand of a gray color and is used as fertilizer. The workers of the Orekhovo-Zuyevskaia Aeration Station were first to learn about this positive feature of the mass. They started splendid flower beds near their enterprise on land where before practically nothing had grown. Now surrounding kolkhozes and sovkhozes use the fertilizer successfully. Agricultural workers produce excellent harvests on vegetable plantations.

The dryer has successfully passed experimental-industrial testing. Filters with removable webbing and centrifuges are already in operation. Now a model has been developed of an entire station for the purification of industrial sewage. The institute's elaborations were used as a basis for the model. The construction of such a station is being completed at the Baykal'skiy Pulp-Paper Combine. It can rightfully be called a plant with pure water.

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USSR

## ALTERNATE PROPOSALS FOR DIVERTING NORTHERN RIVER FLOW

Moscow VODNYY TRANSPORT in Russian 7 Sep 76 p 3

[Article by N. Tsarapkin: "Horizons of Technological Progress: And the Rivers Will Flow Backwards..."]

[Text] The people of our country annually drink 200 cubic km of water, a volume equal to Lake Onega. By the end of the century our "appetites" will grow. Just look at the map: the majority of our rivers flow to the north, whereas 75 percent of the water is needed in the southern regions. The problem of water distribution has become one of the most important in the country. There are several ways to solve it.

Until quite recently many enterprises passed hundreds and thousands of tons of fresh water "through themselves" that emerged polluted. There is now a transition to closed cycle water systems due to water needs. Sometimes the cost for complicated sewage treatment plants reaches 30 percent of the basic industry but the government is conscientiously aware of these expenditures.

But there is another way which more completely uses all the local water sources by creating artificial reservoirs. For example, there are the Mozhayskoye, Istrinskoye and Uchinskoye reservoirs in the Moscow region which not only provide water to industry and agriculture, but have become important transportation arteries and favorite rest and relaxation areas.

But, nevertheless, specialists think that we cannot manage without a territorial redistribution of water resources. "The Basic Trends in the Development of the National Economy for 1976-80" call for conducting scientific research and devising plans for transferring portions of the runoff from the northern and Siberian rivers into Central Asia, Kazakhstan and into the Volga river basin.

The distinct Eurasian alternative calls for enriching the Volga at the expense of the northern rivers and lakes. There are proposals to transfer a portion of the flow from the northwestern rivers and the Danube into the Dnepr. It has been suggested that the water needs of Central Asia and Kazakhstan be

satisfied at the expense of the Ob'. The expanse of canals from the Pechora to the Volga would comprise 1,200 km. Their passage capacity would be 1,000 cubic meters of water per second. The length of the Ob'-Irtysh-Syrdar'ya-Amudar'ya canals would amount to 3,000 km. They would pass 2,500 cubic meters of water per second.

There is even a plan for a joint resolution of the European and Asiatic water problems. Its basis is the transfer of water from the Nizhnyaya Ob' through the Ural into the Pechora basin and further on to the Volga. The water supply of Central Asia, southern Kazakhstan, the central and lower Volga regions and the north Caucasus would improve at the expense of the Volga. The length of the Nizhnyaya Ob'-Pechora-Kama-Volga canals would be 4,400 km. They would permit the flow of more than 20 million cubic meters of water daily.

The third alternative foresees providing water to all regions of our Asiatic and European territory at the expense of the flow of the Volga. And what of the Caspian Sea, which, after all, is becoming quite shallow? There is a proposal to transfer water to it from the Black Sea.

And finally, the last alternative presents itself as the sum total of all rational technological resolutions. It can be called a unified water management system for the country.

Scientists have already begun research. The lead organization in conducting this work has become the Institute of Water Problems of the USSR Academy of Sciences. It now has expeditions at work in the Caspian attempting to explain how increased amounts of water in the Volga influence the river's delta, salinization, the hydrological system of the sea and the fish supply.

But what of this decrease of water in the northern rivers? There is still another expedition working on this problem. It is researching the influence of river water on shipping conditions. You see, reduction in the flow of water in the northern rivers can hasten the seasonal icing of the northern seas.

Major investigative work is also being done by the scientists of the Kazakh SSR Academy of Sciences. Their expedition is working in the region of the Aral Sea.

"It would be premature to talk about the advantages of the proposed alternatives," says the deputy director of the Institute of Water Problems, doctor of technical sciences, G. V. Voropayev. "Meanwhile research is in progress to determine how the redistribution of water reflects on natural processes, in particular, on the ecology, and what kind of socio-economic benefits will it bring to society."

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USSR

EQUIPMENT FOR MONITORING QUALITY OF BALTIC SEA DESCRIBED

Tallin SOVETSKAYA ESTONIYA in Russian 5 Aug 76 pp 2-3

[Article by V. Vel'man, photography by Yu. Vendelin: "Photo essay--horizons of scientific exploration: The sea of our concern, the scientific research operations of propeller-driven sledges, Engineer Yaan Lokk guides propeller-driven sledge for collecting water samples from onboard a helicopter"]

[Text] Summer is here again and the sandy coast of the Baltic Sea once more draws thousands of vacationers, not only from the Baltic area, but from all corners of the Soviet Union as well. The miserly sun, which in this area often withholds the caress of its rays, more than repays the loss of those overcast days on those when it does break through the clouds, and on long autumn evenings the Estonian farmer and the Ukrainian miner, the Siberian construction worker and the Karelian logger recall the salty waves of the Baltic....

But for scientists the Baltic Sea presents a knot of complex problems which require immediate solution today because they have been neglected in the past. What, until recently, did the Baltic Sea represent for the countries situated on its shores? A place for fishing, water transport, vacationing... However, scientists believe that we must consider the possibility of further study of the coastal waters of the sea for the purpose of raising valuable types of fish and seaweed (by the way, does everybody know that the "Kalev" factory uses agar-agar obtained from seaweed growing near Saaremaa as a jelling agent in the candy it produces?), cooling atomic electric power stations, and as a source of desalinated water for irrigating agricultural crops, as well as for the use of industry and populated area.

What practical prospects does this offer? Rough estimates indicate that the rational utilization of the Baltic Sea and its coastal areas adjoining the territory of the USSR will make it possible to increase the national income of the Soviet Baltic republics by 8-10 percent.

Therefore, problems of the preservation and rational utilization of the Baltic Sea have not only scientific significance, but direct national economic significance as well. But the scientists will still have the first word.

In our country the broadest possible range of problems related to the Baltic Sea occupies the attention of one of the youngest scientific institutions of the Academy of Sciences of the Estonian SSR--the Baltic Sea Branch of the Institute of Thermal Physics and Electrophysics headed by Professor, Dr of Physical-Mathematical Sciences Ayn Aytsam. Scientific research in the department is conducted in two areas--the physics of the sea and the chemistry of the sea. Observations are being carried out primarily on the coast near Pryanu by a marine research expedition equipped with modern means for both surface (special ships and launches) and aerial (helicopter) observations.

...Engineer Yaan Lokk takes his place beside the helicopter pilot, and the rotary-winged bird rises effortlessly into the air. What is to be seen from aloft? Laxily rolling waves in calm weather? Their foam-capped crests--harbingers of a storm? These are "lyrical" diversions, more for meteorologists, for the service of the marine expedition of the Baltic Sea Department is at first sight occupied with more prosaic matters: making daily control surveys of the sea, scientific-expedition flights, and from the air directs propeller-driven sledges for collecting water samples.

...The propeller-driven sledges rush swiftly by. To a vacationer on the shore they look like outboard motor boats [skuter], except that for some reason there are no rivals to be seen. But the "rival" is the water: it is "collected" in special water intake devices so that specialists on shore can then conduct the required observations and analyses. Small flasks of water are also collected on the specially-designed launch.

The onshore operations take their own course. The processed data from analyses of the sea water samples turn up on the scientists' desks in the form of columns of figures and the appropriate terms. The studies carried out by the section working on problems related to the physics of the sea make it possible to determine water circulation patterns and the transport of materials on the open Baltic Sea, as well as in its coastal areas. In the jargon of the specialists, problems of "modelling the entire circulation pattern of the Baltic Sea" are being studied here.

The chemists have their own problems. The study of the accumulation of toxic substances is all the more important for the Baltic Sea because the process of "restoration" here is extremely long--about 50 years....

One of the most studied seas on the face of the earth, the Baltic Sea has always been economically and strategically important. Utilized as a fishing area, an important transportation route for all countries situated along its shores, an area for vacationing and medical treatment, as well as a receiver and natural purification facility for the sewage of the basin, the Baltic Sea has also repeatedly served as the arena for the military activities of the naval forces of various countries. In our time the Baltic Sea has become the arena for the work of scientists from the Baltic countries, work directed toward the preservation of its natural resources. Thus, only recently, in May of this year, the Baltic Sea Department of the Institute of Thermal Physics and Electrophysics of the Academy of Sciences of the Estonian SSR hosted colleagues from various countries: a working conference was held in Tallin within the framework of the joint working group for studying pollution in the Baltic Sea from the Scientific Committee on Oceanological Research (SKOR) and the International Committee on Marine Research (IKYeS).

#### PHOTO CAPTIONS

1. p 2. Scientific observations are conducted on the open sea every day regardless of weather conditions.
2. p 3. (upper) There it is, the Baltic "Sea."
3. p 3. (lower) With the aid of solar radiation we can learn about many processes occurring in the sea.

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USSR

#### WATER PURIFICATION FACILITIES AT ODESSA PORT DISCUSSED

Moscow IZVESTIYA in Russian 26 Nov 76 p 4

[Article by A. Blokhnin: "Renewed Purity"]

[Text] Tankers are at the huge moorage berths of the Odessa petroleum port. Two 50,000-ton tankers, the Burgas and the 50-letiye Oktyabrya have approached simultaneously. Hardly had they moored when their flanges were coupled with the supply lines. Just then powerful pumps began operating and ballast water entered huge round silver tanks. From these "buffer" tanks, as the purification specialists call them, the unique conveying of regenerated, fairly well oil saturated sea water begins into the wombs of the tankers.

About two years ago the Odessa ballast water purification station was put into continuous operation. During this period almost three million tons of ballast passed through it. Now clean water is returned to the sea. Moreover, about 18,000 tons of oil have been extracted from it--more than that of six heavily loaded supply trains.

F. Smelyanchuk, the chief of the purification station, has devoted his entire life to the sea. He was a boatswain and then a contract worker for 24 years at the port. Not long before transferring to the purification station he completed evening studies at the polytechnical institute. Why would an engineer switch and become a tanker sanitation engineer?

Shortly afterwards the planners from the venerable institutes began to visit this "non-specialist"--there was something to be learned from Smelyanchuk's work.

Superficially everything remained as per the plan. From the buffer reservoirs of sedimentation tanks the water fell into oil traps where metallic scrapers discarded oil film into the black mouths of hatches of the petroleum collecting pipes. In the next stage water was mixed with air entering the pipes under pressure and directed for final cleansing to flotation devices. Here is where the resolution of the problem was which Smelyanchuk and his unfailing assistant, Nikolay Barba, puzzled over.

Having analyzed the work of the flotation devices in detail, the Odessa engineers proposed a new design for these units--a cascade design. The quality of cleansing grew to such an extent that there was no further need for reagents. And after all, the technology outlined in the plan shows that the station must expend 12 tons of aluminum sulfate daily. A special shop might have had to be built to dissolve and prepare a solution having the proper consistency.

Our conversation was interrupted by a telephone call. The captain of the Burgas was displeased that he still had 1,000 tons of ballast and had nowhere to dispose of this "tail-end." The station's shore tanks were already filled.

"I'll take a look," said F. Smelyanchuk, hanging up the phone. "It's just one more problem. When they planned the station they didn't count on the possibility of simultaneous mooring of several huge tankers. And in the future such coinciding events will occur more frequently. We certainly need an additional reservoir."

And there is still one more obstacle. The norms for the degree of purity of ballast water are quite rigid and are now becoming even more severe. Such logic in the constant struggle to cleanse our southern seas is, as they say, the "second echelon" of water conservation measures.

There are reserves for further improvement in cleansing tanker ballast. The Odessa guardians of purity have readied their new proposals and presented applications to the Office for Rationalization and Inventions [BRIZ]. They feel that the corresponding organizations will support them. The sea must be as clean as possible.

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USSR

TURKMEN SUPSOV PRESIDIUM VIEWS POLLUTION IN KRASNOVODSK OBLAST

Ashkhabad TURKMENSKAYA ISKRA in Russian 3 Nov 76 p 2 LD

[TURKMENINFORM Report: "In the Turkmen SSR Supreme Soviet Presidium"]

[Summary] A Turkmen SSR Supreme Soviet Presidium session has examined the question of fulfillment of nature conservation legislation in Krasnovodsk Oblast. Oblispolkom Chairman T. Durdynazarov presented a report.

The session noted that the oblast's soviets and their ispolkoms devote attention to nature conservation, and are taking steps to implement legislation. The struggle against pollution of the Caspian Sea and air basin has been intensified, and essential measures to protect reservations are being taken. A number of sewage treatment installations have been commissioned in recent years, and measures are being taken to improve land use and the planting of greenery.

"However, the fulfillment of nature conservation legislation in Krasnovodsk Oblast is not up to the proper standard." There are "substantial shortcomings in the provision of environmental protection measures" by local organizations, and "instances of blatant violation of the laws 'on nature conservation in the Turkmen SSR' and on the health service and of the demands of the republic's water and land legislation are tolerated."

Agricultural land is being lost through soil salinity, and illegal timber felling and mass poaching are causing "substantial damage." Pollution of Krasnovodsk Bay by petroleum products and refinery waste "still exceeds the permissible norm." "Substantial shortcomings are also tolerated in work for the protection of the atmosphere locally." Propaganda in their fields remains ineffective, and the republic's scientific institutions and conservation, hunting and fishing societies are not performing their tasks properly.

The Turkmen SSR Supreme Soviet Presidium adopted a resolution making it incumbent upon the Krasnovodsk Oblispolkom and republican ministries and departments to supervise anti-pollution measures in enterprises, to implement measures for the reduction of pollution of the Caspian Sea and atmosphere,

and to insure strict observance of legal requirements. Local soviet ispolkoms are to involve standing commissions, deputies and the workers aktiv more broadly in verification and discussion of the implementation of legislation. Republican ministries and departments are also to intensify supervision of environmental protection measures, and implementation of measures aimed at rational use of agricultural and forest resources.

"The Turkmen SSR Academy of Sciences and other scientific research institutes are to intensify scientific research work in the sphere of nature conservation and rational use of its resources."

The republic ministries of culture and justice, state committees for the mass media, newspaper editorial staff and public societies are instructed to "implement measures to further intensify propaganda of legislation for nature conservation and of a thrifty attitude to its riches."

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USSR

## CONSTRUCTION DELAYS ON TAGANROG SEWAGE TREATMENT PLANT

Moscow TRUD in Russian 13 Nov 76 p 2

[Article by Yu. Bugrov, senior inspector-physician of the Rostov Territorial Council for Management of Trade Union Health Resorts; A. Isayev: "Sewage Enters the Sea--Why Are Sewage Treatment Plants Being Built So Slowly on the Shores of Taganrog Bay?"]

[Text] The golden spit region of Zolotaya Kosa on the shores of Taganrog Bay have long been a source of rest and relaxation for the people of Taganrog. About 45,000 people spend their leisure time there in the summer.

But just recently sewage dumping into the bay began. In the area around the village of Dmitriadovka a municipal sewage treatment plant is being built, but it will be a long time before it becomes operational. Even the facilities for mechanical purification and chlorinization are not working.

Water discharge, under the control of the oblast and city public health and epidemiological stations, is being done with intensified sewage decontamination using chlorine. But, despite this, wastes are entering Taganrog Bay and this in no way improves the quality of sea water.

It would seem that with such a situation everything must be done to speed up construction of the sewage treatment plants. But, alas, the distance between wishing and operating is enormous.

Already entered in the norm is that capital investment for building the sewage treatment plants will not be systematically utilized. Last year's metallurgical construction plan for Metallurgstroy was 624,000 rubles but only a little more than 200,000 were used. Even this year's nine-month plan went unfulfilled.

Recently V. V. Trofimov, the RSFSR Minister of Health, had to ask the RSFSR Council of Ministers to devote attention to the Rostov Oblast Executive Committee[Oblispolkom] for its unsatisfactory course in building sewage treatment plants in Taganrog. A corresponding letter was sent to the chairman of the Rostov Oblispolkom, S. N. Sabaneyev. But even after this the sewage treatment plants remained as stepchildren to the builders.

No, there is no feeling of tension at the Dmitriadovka village construction site. There are distressing time losses due to frequent delays in the delivery of concrete by building materials combine number eight. There is no way to square accounts with the instances of non-coordination, disorganization and common irresponsibility.

Here is a typical "series" of misunderstandings and discrepancies from which this matter suffers. On a day when we were with the construction workers they were late for their shift because the bus did not pick them up on time (the sewage treatment plants are far from the city). Meanwhile, in accordance with the schedule, concrete was delivered to the construction site but noone was there to accept it. When the construction workers finally arrived at the site, concrete delivery had stopped.

The finishing workers from UNR-100 of the Trust for Special Finishing Work and the installation personnel from the southern steel design organization, Yuzhstal'konstruktsiya, and the southern technical installation organization, Yuzhtekhnmontazh, were in no hurry to get to the work site. The subcontractors were in no hurry and the plan calling for the activation of the chlorinator on 1 April 1976 was hopelessly broken.

You can add to this a fluctuation in personnel due to poor working and living conditions (it is difficult and far to get to the work area, there are no public catering facilities and there is even a shortage of drinking water). It is not difficult to comprehend why building of the sewage treatment plants is "on the skids." The deputy chairman of the Taganrog city executive committee, N. G. Shakhovoy, complained in a conversation with us that, "Our work projects are in last place with the builders."

The recently adopted decree of the CC CPSU and the USSR Council of Ministers "On Measures To Prevent Contamination of the Basins of the Black and Azov Seas" underlines the need for improved use of water resources. And so the extremely slow construction of sewage treatment plants at the village of Dmitriadovka is completely inadmissible. This at last must become understood by the builders and the city authorities.

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USSR

BRIEFS

TAGANROG AUTOMATED CLEANING SHIPS--The Taganrog shipbuilders have filled the order for the Zhdanov port. They have put the ship called the "floating chemical plant" in the water on time. While looking at this beautiful ship swaying on the waves of the Sea of Azov one would not guess that it is assigned to such dull work as cleaning the compartments of large capacity tankers and ships carrying dry cargo. This automated cleaning lady, and the name is prosaic, is a cleaning station. But its importance is great. The floating station equipped with an intricate chemical apparatus and automated equipment allows for cleansing a tanker of oil residue and readying it for acceptance of a new load in a matter of hours. The waste products derived are placed in special tanks and delivered to the shore to undergo secondary treatment. Such "chemical plants" are produced at only one enterprise in the country--at the Taganrog Ship Repair Dockyard of the USSR Ministry of the Maritime Fleet. Cleaning stations are now operating at ports in Odessa, Il'ichevsk, Novorossiysk, Arkhangel'sk and Baku. [Text] [Moscow PRAVDA in Russian 8 Oct 76 p 6] 8504

NEFTYANYYE KAMNI ELIMINATES SPILLS--Baku. The mightiest oil collecting point in Azerbaydzhan was put into operation yesterday at Neftyanyye Kamni. The new complex which replaces three older ones was constructed according to a program calling for preventing contamination of the Caspian Sea. A completely hermetic system eliminates accidental spills of fuel into the sea. [Text] [Moscow TRUD in Russian 13 Nov 76 p 1] 8504

SELF-PROPELLED CLEANING SHIPS--At the building slips of the Baku Ship Repair Dockyard imeni V. Sturua a new type of self-propelled fitter ships has been introduced. They are equipped to serve all the country's steamships. The dockworkers call this series of ships "sea orderlies." They will keep track of the cleanliness of water areas of sea and river ports preventing possible contamination. The floating orderlies meet ships at the nautical roadsteads, accept polluted water and deliver it to sewage treatment plants. [Text] [Baku VYSHKA in Russian 10 Nov 76 p 2] 8504

**MINSK WATER PURIFICATION SYSTEM**--At a branch plant of the Kama Automobile Plant, a new plant producing automotive equipment and located on the Ik River in Bashkirya, a complex of industrial sewage treatment plants is being built. It was developed by the Minsk automotive institute Avtorempromprojekt of the USSR Ministry of the Automobile Industry. This system will allow an enterprise to repeatedly use up to 90 percent of the required water. At first cleansing is done by the highly effective method of electrocoagulation. It is based on the passage of a constant electric flow with a voltage of up to 20 volts through a system of steel electrodes immersed in the mass being cleaned. The water is freed of harmful contaminants by passing chemical reagents and becomes suitable for repeated use in industry. With the aid of iod-exchange devices electrocoagulation is supplemented with desalinization. Such "binding," the first implemented into plant practices, will lead to a minimal discard of processed water into the Ik, Kama and ultimately the Volga rivers. The Minsk planners' development has made it possible for the plant to refuse purchase of imported equipment which had been projected in the preliminary plan. Similar sewage treatment facilities have also been developed by the institute for the Yaroslavl' association Avtodizel', the Saratov Bearing Plant and for other enterprises of the automobile industry situated in the Volga basin. The institute has proposed a new and original system to the Kuybyshev Bearing Plant. It calls for joint cleansing of industrial and municipal sewage water and provides the opportunity, with some minor renovation, to use the existing sewage network of the plant for this purpose. It will lower the cost of the facilities and speed up the time they become operational. Such a resolution will provide savings of 3-4 million in construction and installation work. This blending of processes will be done for the first time in the country. The institute is now working on intensifying the purification process using the electrocoagulation method, it is creating unified devices for the various substances contained in water and is improving plant design. All this will guarantee the finest conservation of the environment and the air and water basins of the Volga and Caspian. This work was begun for the enterprises located in the river basins of the Black and Azov seas. [Text] [Minsk SOVETSKAYA BELORUSSIYA in Russian 21 Jul 76 p 4] 8504

**AUTOMATED TANKER CLEANING**--Novorossiysk. Tankers arriving in the port at Novorossiysk can now discard their ballast water into reservoirs of a new complex designed for cleansing. The automated remotely controlled complex allows for the entire process to be conducted from the dispatcher's console. [Excerpt] [Moscow IZVESTIYA in Russian 8 Nov 76 p 5] 8504

AUTOMATED REFUSE COLLECTION--The inhabitants of Severnyy Chertanov have been freed from the rumble of heavy-duty vehicles arriving to pick up the wastes from inlet chambers of refuse lines. This microrayon has been equipped with an automated pneumatic system for the centralized collection of refuse. It is an underground network of pipelines connecting shafts of the refuse lines with a refuse collection station. The vacuum pumps set up here create a vacuum in the piping system, thanks to which the wastes and accompanying gases are drawn off from the refuse lines and delivered to the station. Then the compacted and packaged materials are hauled in airtight containers beyond the outskirts of the city. The question now is what to do with the wastes that have been hauled away, especially when considering large cities? For example, the Leningrad plant for mechanized treatment of everyday wastes with the aid of magnetic separators, extracts ferrous metals from the refuse, crushes the remainder and turns it into a compost in huge drums. It can be used as high quality organic fertilizer. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Sep 76 p 4] 8504

KARELIAN BIOLOGICAL PURIFICATION--Karel'skaya ASSR--The paper and pulp combine in Segezha has a station for biological purification of industrial sewage. The combine is one of the largest enterprises in the northwest portion of the country. The first scheduled station is now in operation. Daily it purifies 175,000 cubic meters of sewage. The water discarded into the Vygozero is practically free of harmful impurities. [Excerpt] [Moscow EKONOMICHESKAYA GAZETA in Russian No 43, Oct 76 p 10] 8504

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FINLAND

ENVIRONMENTAL PROTECTION PROGRAM COMPLETED

Helsinki HELSINGIN SANOMAT in Finnish 10 Nov 76 p 10

[Text] After 2 years of preparation the Council on Cooperation of the Metropolitan Area has completed a joint program for the area's environmental protection. The extensive program points out, among other things, that the counties in the metropolitan area should acquire and manage their recreational areas in cooperation. Furthermore, environmental protection legislation should be brought up to date without delay.

The environmental protection program charts the area's natural resources, clean air protection, noise pollution, refuse disposal, water protection, nature conservation, preservation of natural scenery, recreational areas and living environments.

According to Leo Virkkunen, head of cooperation, the program is not a "final document, but a statement in principle in regard to certain central problems in environmental protection," and Jorma Sunell, chairman of the committee on environmental protection of the YTV [Council on Cooperation], stresses that the purpose of this first regional environmental protection program is, "besides providing a foundation for making the environmental protection goals of the metropolitan area more precise, to outline the necessary measures as well."

Vice chairman of the committee Martti Markkula is not very optimistic: "The approval of the program by the YTV council as such does not guarantee even a partial implementation of the program." Markkula believes the inadequate and ill-defined environmental protection organization in the counties of the national capital area is the biggest hindrance for the implementation of the program.

According to the program the environmental problems of the metropolitan area are for the most part traffic problems, water pollution, damages to the natural scenery, uninspiring living environments and various social adjustment difficulties.

Objectives listed in program include preparing a comprehensive report on the condition of forests, drawing up regulations for management of natural areas, placing traffic routes in areas that are already in use so that routes breaking up natural areas would not be built, and a clear definition of areas to be built on and areas that will remain in their natural state.

In regard to clean air protection the program states that the counties in the metropolitan area must jointly draw up the goals of regional clean air protection and make a plan for an organization, and that the Helsinki control network must be expanded to cover the entire national capital area.

The program also proposes that clean air protection legislation should be hurried, energy maintenance be concentrated and the share of long distance heating increased. Furthermore, the number of cars and unnecessary transportation needs should be reduced by coordinating the planning of traffic routes and by making mass transportation more effective.

Noise problems of the metropolitan area are mainly caused by land and air traffic. The environmental protection program lists as one of its goals formulating uniform noise norms. Planning of land use, locating housing and places of employment, noise barriers and speed limits in particular are considered as the most important means of eliminating traffic noise. The last forests in the area in particular should be preserved as sources of peace and meditation, the program suggests.

#### Organization for Refuse Collection

Refuse disposal has been organized in various ways in the metropolitan area counties. In Helsinki refuse is treated in Kylasaari, Iso-Huopalahti and in Vuosaari. In Espoo town refuse is taken to Mankkaa and Lahnus and in Vantaa to Seutula and Sotunki. Some incinerators at the dumps are so poorly equipped that they are detrimental to the environment. As far as the environment around the dumping areas is concerned the most central problems are unsafe locations, refuse transportation, inadequate recycling, treatment of certain special refuse materials and locations for sewage sludge.

According to the program, an efficient collection organization must be established in the area for collecting refuse and poisonous materials and, at the same time, sorting out of refuse must also be taken care of. Furthermore, refuse disposal costs must be paid according to the so-called principle of refuse generating.

If dumps are still needed, they have to be located in areas where future land use permits or needs reworking of natural scenery. Swamp and spring areas are not permitted to be used as dumping areas. Problem and special refuse must be reprocessed. This will require efficient collection and marketing operations based on the so-called refuse exchange. "In any case, refuse disposal must be organized so that the refuse will not damage nature nor man," the program emphasizes.

## Industrial Plant Compliance

According to studies both the waters in front of Helsinki all the way to the open sea and the water courses of the Vantaa and Kerava Rivers are badly polluted.

The most immediate goals in regard to protecting waters from pollution are a more efficient purification of waste water and discharging purified waste water on the open sea. Rivers, too, must be cleaned so that their water can be used for making drinking water without complicated chemical purification processes.

According to the program industrial plants must be required to comply with water maintenance and prevention of water pollution better than before, water purification plant standards must be controlled and checked, sewers must be tightened, ingrown bays must be cleaned either through dredging or through increasing the water current. Also, ground water resources of the metropolitan area must be inventoried and protected from pollution. Polluted beaches must be made suitable for swimming again, the program for environmental protection urges.

The YTV environmental protection program stresses the fact that environmental protection legislation must be brought up to date without delay. Nature conservation areas that are unique in regard to the entire country must be preserved. Such areas are, according to the YTV, Espoo's Laajalahti, Helsinki's Old City Bay, Vantaa's Kerava River valley, Nuuksio highlands, and the Mustavuori and Herukkapuro areas in Vantaa.

The area's fauna must be protected and its existence secured. The program proposes, among other things, that a permit should be required to own an air rifle. Also, shooting should not be allowed anywhere else except at shooting ranges.

## Many Valuable Areas Have Already Been Destroyed

Large population increase in the metropolitan area and increased construction in this area has caused concern about the sufficient number of areas suitable for recreational uses. While increased leisure time has increased demand for recreational areas many valuable free areas have been either destroyed or reserved for construction according to the YTV.

According to the environmental protection program recreational areas of the metropolitan area must be acquired and cared for in cooperation between the counties. The use of coastal waters, islands and the coast itself for recreational purposes must be emphasized in particular. Also, the recreational areas of the region must be inventoried and classified.

According to the program, counties could contribute to the protection of the environment through their land policies above all, by acquiring land for the county and determining the planning for its use and the timing of the implementation of these plans, through town planning policies, through agreements with builders, commercial and housing production programs, county housing production, building permit and control method, promotion of housing areas that are diverse in regard to their age and social structure, making cooperation between county officials more efficient, and by increasing the chances of the people themselves to influence the quality of the immediate environment of residential areas.

#### Crimes Against Environment

The Environmental Protection Committee has adopted the term "environmental crime" as a general term for punishable offenses against the environment.

The YIV Environmental Protection Committee believes that the legislative reforms proposed in the program are necessary. Central county organizations should draw up joint guidelines of how counties could already, based on existing regulations, deal with environmental crime more effectively.

In connection with the reorganization of the Council on Cooperation of the national capital area the organization of the checking and supervision functions should be clarified, as well as the possibilities that the YIV would have to improve the situation, the program states.

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SWEDEN

COMPLEXITY OF ENERGY PROBLEMS REVIEWED

Stockholm SVENSKA DAGBLADET in Swedish 24 Sep 76 p 3

[Article by Anders Wijkman, moderate member of Parliament: "Responsibility of Seeking Alternative Sources of Energy Rests Entirely on Industrialized Countries; Nothing Simply 'Yes' or 'No'"]

[Text] The discussion regarding our future energy policy is heavily one-sided. Nuclear energy is dominating the entire debate although nuclear energy, even with the most expansive development alternative, will not account for more than 15 percent of the energy deficit in the 80's. On the other hand, oil, which today accounts for 70 percent of our energy provision and is heading us along the certain road to great damage to our environment and health, is being discussed hardly at all.

Now I am not criticizing the fact that nuclear energy questions have obtained a prominent place in the debate. On the contrary I see this to be natural when agreement regarding this form of energy runs deep in all parties. What must be criticized is the fact that the debate stops there. Just as though the solution to the future's energy and resources problem could be given by a simple "yes" or "no" to nuclear energy.

Actually neither oil nor nuclear energy contains any solution to our long-term energy problem.

In part because neither uranium nor oil will stretch more than a bit into the next century (unless breeder reactors come into use).

In part because both the use of oil and nuclear energy production have negative consequences for the environmental and foreseeably the climatic balance on our planet. In this connection both sulfur, carbon, and carbon dioxide as free heating discharges are of significance.

Ecological Barriers

For me it is a self-evident truth that the world's energy production cannot continue to grow as it has hitherto. Purely ecological barriers enter and

force us to rethink it. Therefore in practice the industrialized countries bear the entire responsibility of seeking alternative energy sources, i.e., those which cooperate with nature and not on the contrary, like today. For underdeveloped countries oil is the only alternative for many decades to come.

Therefore from the long-term perspective nuclear energy becomes rather uninteresting provided that nuclear energy's safety risks are not felt to be great. If on the other hand the risks are considered acceptable, nuclear energy will contribute effectively to moderating the use of oil in the next few decades, and this cannot be neglected!

A "no" to nuclear energy, i.e., successive curtailment, will lead to one of two consequences as far as Sweden is concerned.

/Either/ [in boldface] a significant increase in oil imports to compensate for the cancellation of nuclear energy, /or/ [in boldface], which seems to me less probable, a situation where we by vigorous savings efforts will quite simply compensate for this "cancellation" [of this source].

To talk about mass unemployment and social decline is pure scare-propaganda. No party will jeopardize employment! (See, by the way, Professor Bjorn Kjellstrom's report on nuclear energy, related in SVENSKA DAGBLADET 15 Sep 76.)

We must quickly examine the whole utilization of energy and resources. It is indeed my absolute opinion that we are progressively destroying our resources with today's technology instead of building them up.

#### Potential Resources

Think for a moment about our present use of resources. The use and throw-away mentality recurs everywhere. In factories and municipalities. Just think how many potential resources all our waste and garbage contains every day. And how is it being used?

Instead of considering garbage and waste as resources we do precisely the opposite. The greater part of our waste is dumped somewhere--soon we will be drowning in garbage! At best garbage is used as fertilizer and now and then is burned up and yields some heat energy.

#### On the Right Road?

Our municipal purification plants are expensive to build and expensive to run--and they especially use up energy. We are proud of all these plants because more and more lakes now become swimmable. But are we on the right road?

In purification plants salts and other growth factors are precipitated and in this way our lakes are prevented from filling up. Photosynthesis--life's

driving factor--is hampered by the fact that nutrients are not made available to plants. Had the pollutants gone instead straight out into the lake new structures would have been built up by the organic material and nutrient salts with the aid of solar energy. Heavy metals (PCB's, DDT, Hg, etc.). would have combined with hydrogen sulfide to form bog iron ore and the water would have been decontaminated.

#### Costs Energy

Building up corresponding structures (e.g., metals in concentrated and easy-to-use form) costs enormous amounts of energy from oil or nuclear power. This would have taken place entirely without expense with the aid of photosynthesis.

Besides, and this is important, with today's techniques heavy metals and other poisons are spread about into nature again. In a lake which is filling up the poisons become bound and disturb neither flora nor fauna.

#### Environmental Protection Reasonable?

Now I am not saying that we must drastically abandon purification plants and let our lakes fill up again. But I am questioning whether today's environmental protection is reasonable. Instead of working with Nature's laws we are working against them.

It must be possible that in cooperation with nature, i.e., by utilizing photosynthesis, our waste problem will be solved better and more effectively. When in the future waste is considered a resource the whole debate on economic growth will obtain a new perspective.

If we indeed succeed in recycling a large and growing share of the resources which today end up in the dump environmental pollutants will suddenly gain a completely different perspective. (Fil. lic. Staffan Delin of Astra, Sodertalje has investigated this problem and has in his book "Altered Circles" demonstrated an alternate technological approach.)

#### Humanity

Here I have only wished to show how great and complicated energy and resources problems truly are. That is why I can allow myself to consider nuclear energy's to be or not to be as something which has been magnified in the debate. The decisive factor for humanity is--regardless of the extent of nuclear energy--how we will succeed in working with an attitude toward resources whereby we work with and not against Nature!

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TURKEY

ANKARA AIR POLLUTION SAID NEAR CRITICAL STAGE

Istanbul CUMHURIYET in Turkish 27 Oct 76 pp 1, 9

[Text] Ankara (ANKARA NEWS AGENCY) - With the introduction of central heating systems to warm the air came also a thick blanket of polluted air over the city of Ankara. Those concerned say that the air pollution in Ankara will be even worse this year than in past years, and insist that unless something is done we will be experiencing massive deaths in 4 or 5 years.

Stating that the air pollution rate in Ankara last winter was 18 times the condition of normal air, officials have said that though the amount of smoke produced by burning fuel-oil has been reduced, this has not reduced the amount of poison in the air. Less smoke does not mean fewer poisons, they said.

Vice president of the Turkish War on Air Pollution Association, Sinasi Ozdenoglu, announced that it would cost 600 million liras to clean up the air in Ankara and said that, in failing to resolve the problem, the Ministry of Energy and Natural Resources was playing with the lives of the people. Ozdenoglu mentioned the Seyitomer smoke-free fuel project which cost 200 million liras and said that Ankara's poisonous air problem could be solved with the implementation of three more such projects. Recalling that Prime Minister Suleyman Demirel had conducted the opening of the Seyitomer project 3 months ago, Ozdenoglu said that the plant, nevertheless, has not begun production yet.

Fuels Used in Ankara

Ozdenoglu said that 1.1 million tons of lignite are burned annually in Ankara, 600,000 tons of which are obtained from the private sector and 600,000 tons from the public sector. The sulfur content of lignite purchased from the public sector is 30 parts per thousand, Ozdenoglu said, whereas private sector lignite has a sulfur content of 90 parts per thousand.

TURKEY

INDUSTRIALISTS SAID INDIFFERENT TO POLLUTION

Istanbul AKSAM in Turkish 9 Nov 76 p 5

[Text] Ihsan Karababa, chairman of the Chamber of Chemical Engineers, claimed in a statement issued on behalf of the Marmara and Bogazlar municipalities union and the Chamber of Chemical Engineers that our industrialists are behaving irresponsibly with respect to environmental pollution.

Karababa said in the statement:

"In our country where unplanned, uncontrolled industrialism aimed at maximum profit is taken as the model of development, the environment and the resources are being misused for gain. It is the broad masses of the people, in this case, who shoulder the full burden of development, and it is also they who are most affected by environmental pollution. The end of vigorous life in the Gulf of Izmit, the Gulf of Izmir, the Golden Horn, and the Bosphorus; the near extermination of plant life in the Murgul and the Maden; the threat of extinction to the tobaccos of the world-famous Bafra Plain; all are painful but inevitable results of this lack of concern."

The statement accuses our industrialists, who are determined to industrialize at any cost, of having an "attitude of irresponsibility and disdain for human life."

Chairman of the Economic Development Foundation, Ertugrul Soysal, addressing the meeting attended by visiting German businessmen, said, "Industrial pollution has intimidated the European people. We wait in vain for the industry that various German states will not allow to be established."

Organization to Combat Environmental Pollution

The municipalities and the Chamber of Chemical Engineers understand the significance of environmental pollution and, in a protocol concluded between them, have vowed to fight it.

The 50-article protocol calls for public monitoring of industries that pollute the environment, action against pollution of the seas, training to combat industrial pollution, and ensuring that the developed countries pay attention to these concerns when making investments.

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